

Laser Wind Imaging Innovations from CASI

Center for Active Sensing and Imaging

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New Meets Old



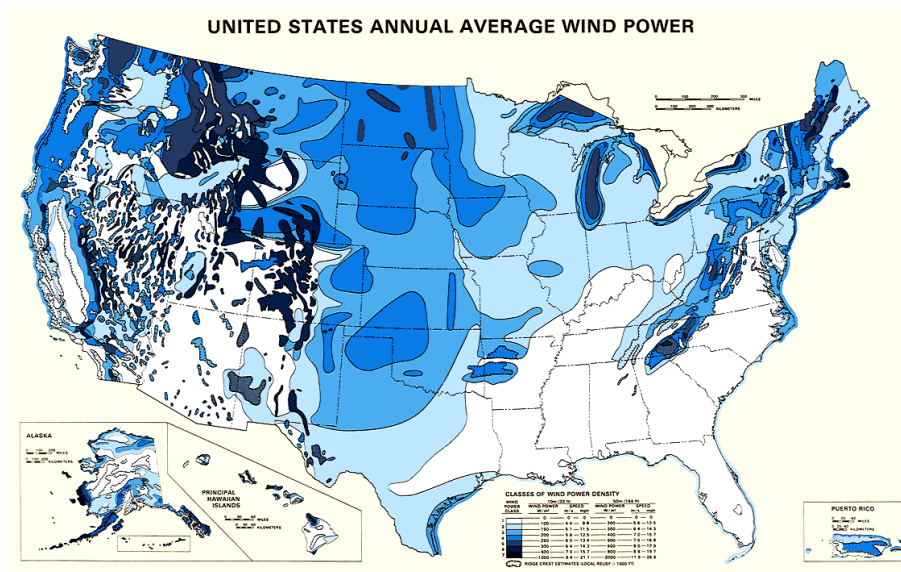
Both likely used same siting method!



Traditional Siting Methods



Observations Sometimes very obvious



Measurements

- Historical
- Regional
- Local



Cup Anemometer



Met Tower

Typical Wind Farm



- 100 turbines
- \$400+ million cost
- 44,000 homes served
- Produces ~10% less electricity than projected

VisibleWind™



**VisibleWind will
increased
performance and
reliability**

VisibleWind™



ValidWind™

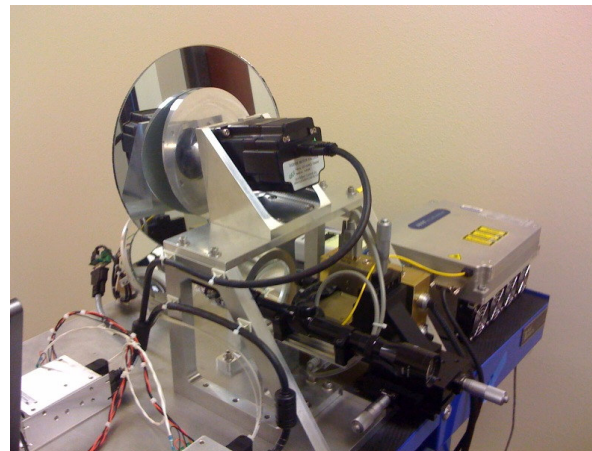
Laser
range
finder

Retro
reflecting
balloon

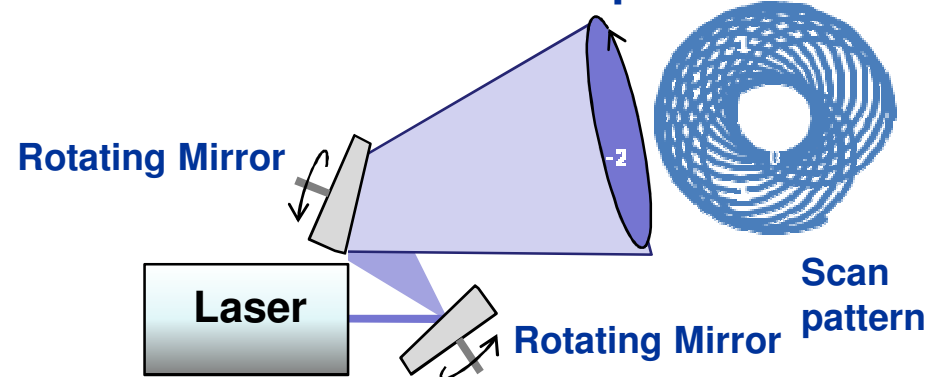


- Laser tracking of small balloons to profile local wind flow
- Quick, low cost, easily fielded
- Highly precise and accurate
- Day / Night operation

VolumeWind™



- Laser imaging of large air volumes
- Portable, rapid deployment, cost effective
- Day / Night operation



Summary



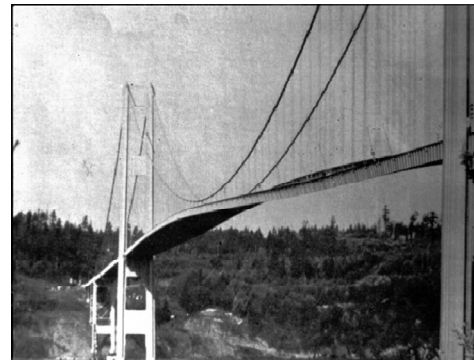
VisibleWind Energy Markets:

- 3D wind modeling over complex terrain
- Assess wind variability
- Optimal turbine locating
- Improve turbine design
- Advance warning of wind gusts and sheer



VisibleWind Non-Energy Markets:

- Architectural surveys
- Civil engineering
- Air pollution assessments
- Homeland security threat detection



Utah Wind



- Opportunities
 - USTAR
 - High interest in wind energy
 - Complex terrain, micro siting
- Challenges
 - No GE or Vestas in Utah
 - Comparatively small market